Article Abstract

Title:	Stress corrosion cracking of Al7075 alloy processed by equal channel angular pressing
Author(s):	S. Ramesh Kumar[1], Kondaiah Gudimetla[2], P. Venkatachalam[3], B. Ravisankar[4]
Address(es):	[1,2,3,4]Department of Metallurgical and Materials Engineering, National Institute of Technology Trichy, INDIA [*]Corresponding Author: e-mail: srk1306@gmail.com, Tel +91-99940-39472.
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Abstract:	The aim of the present work was to evaluate the stress corrosion cracking (SCC) behavior of the annealed Al-7075 alloy before and after Equal Channel Angular Pressing (ECAP). The SCC behavior of the Al-7075 alloy before and after ECAP was evaluated using slow strain rate testing (SSRT). Tensile and SCC behavior of the UNECAPed and ECAPed samples were compared. The elongation and ultimate tensile strength (UTS) was decreases 1.25, 1.1 times respectively after SCC in the annealed Al 7075. After ECAP, about 1.6 times decreases in elongation and 1.09 times decrease in UTS is observed. The decrease in ductility is more as compared to UTS. The fracture surface analysis (from the SSRT tests in 3.5% NaCl solution) revealed predominant ductile failure in the before ECAP and mixed (quasi cleavage) mode of failure was observed after ECAP. Though the SCC resistance decreases due to ECAP, this appears a positive sign that the SCC may be improved by modifying process parameters and the condition of the sample.
Keywords:	Severe Plastic deformation, equal channel angular pressing, stress corrosion cracking, Al 7075, mechanical properties, TEM.